

MERRICK SERIES 7000 PASTE SLAKERS

SPECIFICATIONS

CAPACITIES

- 400, 1000, 2000, 4000, 8000 and 12,000 lb/hr of calcium oxide (Quicklime or Pebble Lime)

RANGE

- 10:1 of design rating (15:1 for 7100 Slaker)

SPECIFIC SURFACE

- Water controls provide the smallest particle size of any slaker

CONTROLS

- Water controls are Microprocessor based to provide accurate positioning of the electronic water valve proportional to paste consistency

GRIT SEPARATION

- Inclined screw type (standard offering)
- Screen type

ELECTRICAL REQUIREMENTS

- 7100 (400 lb/hr) - 208-230-460/3/60 3/4 hp mixing motor, 1/2 hp grit separator motor
- 7101 (1000 lb/hr) - 208-230-460/3/60 1 hp mixing motor, 1/2 hp grit separator motor
- 7102 (2000 lb/hr) - 208-230-460/3/60 1.5 hp mixing motor, 1/2 hp grit separator motor
- 7104 (4000 lb/hr) - 208-230-460/3/60 2 hp mixing motor, 1/2 hp grit separator motor
- 7108 (8000 lb/hr) - 208-230-460/3/60 3 hp mixing motor, 1/2 hp grit separator motor
- 7112 (12,000 lb/hr) - 208-230-460/3/60 5 hp mixing motor, 1/2 hp grit separator motor
- Consult factory for hp for vibrating grit screen

WATER REQUIREMENTS 18% SLURRY STRENGTH

- 7100 - 10 gpm at 40 psig
- 7101 - 20 gpm at 40 psig
- 7102 - 30 gpm at 40 psig
- 7104 - 50 gpm at 40 psig
- 7108 - 110 gpm at 40 psig
- 7112 - 160 gpm at 40 psig

MATERIALS OF CONSTRUCTION

- Pug Mill / Grit Screw Compartment- 3/16" carbon steel on 400 and 1,000 lb/hr models. Remainder 1/4" carbon steel
- Covers- 11 gauge HRS hinged and removable
- Carbon steel finish is universal primer with high temperature epoxy top coat. 304 or 316 stainless steel is optional

GENETIX® PROCESS CONTROLLER

MERRICK slakers can utilize PLC and Genetix® microprocessor touchscreen controls. MERRICK controls can be configured to run all storage silo functions.



DYNAMIC INNOVATIONS SINCE 1908
WEIGHING, FEEDING, CONTROLS & ENVIRONMENTAL SOLUTIONS

SERIES 7000 PASTE SLAKERS



FULLY AUTOMATED LIME SLAKING SYSTEMS

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MERRICK
COMPANIES

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**MERRICK**

ENGINEERED FOR SIMPLE OPERATION

The Series 7000 Paste Slaker incorporates a user friendly, highly accurate microprocessor electronic control for consistent water-to-lime ratios. Series 7000's innovative design eliminates costly mechanical controls, yet still maintains the heat of reaction to achieve slaking temperatures required to produce smaller hydrate particles. The standing debate regarding the need to sacrifice simple operation and reasonable operating costs to achieve desirable small particle consistency is moot with a simple innovative approach to paste slaking. Simplification is achieved through value added engineering. This approach eliminates expensive, difficult to adjust mechanical components.

LIME AND LIME FEEDING

Lime in its basic form is not commonly used. The final application is almost always that of Ca(OH)₂, Calcium Hydroxide (also known as hydrated lime). For economic reasons, on-site conversion of CaO, calcium oxide (also called quicklime or pebble lime) is preferred to purchasing hydrated lime. Quicklime requires only about 75% as much chemical by weight to obtain the same results; which translates to 75% less storage capacity, cost of handling, and freight. Additionally, Quicklime is less dusty and easier to handle. Quicklime is normally metered to the slaker by a gravimetric or volumetric feeder. However, because the weight of a given volume may vary 5 to 15% from the average, gravimetric feeders will compensate for changes in material bulk density and provide a more uniform and accurate flow to the slaker. Consideration should be given to the design of the lime storage bin to insure a constant flow of material to the feeder. Quicklime is discharged directly from the feeder into the inlet of the slaker. The lime feed rate is determined manually or automatically by the level of slurry in the slurry surge tank located directly beneath the slaker or by a demand signal from the process.

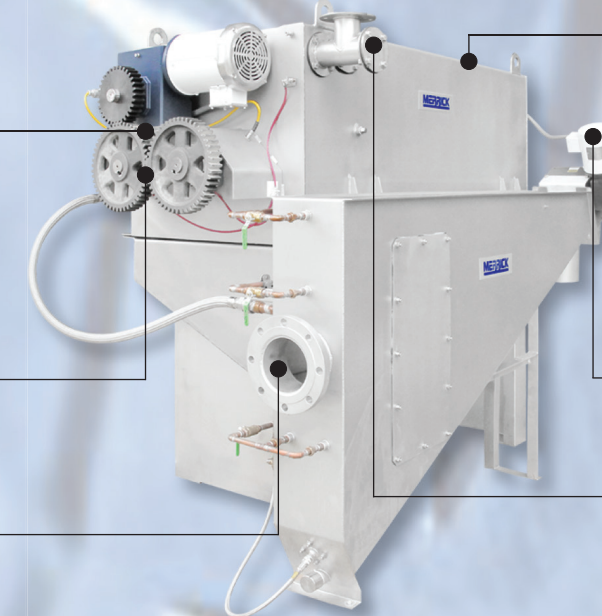
THEORY OF OPERATION

The combining of calcium oxide and water is an exothermic reaction, creating calcium hydroxide and heat. Slaking by employing the correct variables of time, temperature and mixing will cause the lime particle to rupture, exposing micro-particles and effective conversion of the lime to hydrate. Paste slaking utilizes the heat from the chemical reaction in the pug mill to break apart the calcium oxide particles, allowing the micro-particles to be exposed to the hydration process. Temperatures in the paste slaker typically reach the boiling point of water within three minutes and complete slaking within five minutes. The Paste Slaker combines calcium oxide with water at a water-to-lime ratio of 2 to 2.25:1 by weight. The lime is metered into the slaker pug mill reactor by means of a lime feeder. Water is proportioned by measuring the power consumption variables (torque) required to maintain mixing performance at the specified paste consistency. The power consumption variables are measured and then modified by a MERRICK developed control algorithm. The algorithm resides in an industrial microprocessor controller. The CPU determines the output signal to a control valve which continually adjusts the water flow to the slaking compartment. The torque valve's feedback circuit alarms the user of any out of paste consistency condition. The slaker utilizes two sets of counter rotating mixing shafts to provide proper mixing efficiencies, bringing lime and water into uniform, intimate contact. The paste flows over a weir to the dilution chamber where spray nozzles provide dilution water while helping separate the lime particles from the grit. The resulting suspension exits the slaker into a grit separator for removal of inert material.

FEATURES AND BENEFITS



Removable Slaker Cover



Gear-to-Gear Drive



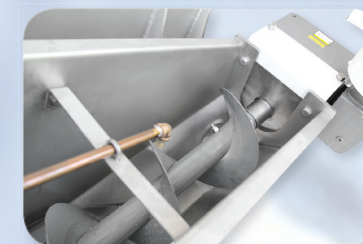
Lime Inlet

Paste Discharge

Grit Motor

Removable Hydraulic Jet Dust and Vapor Remover

Gravimetric or Volumetric Lime Feed



Auger Type Grit Remover



Electronically Actuated Metering Valve

Protected Bearings

Grit Discharge

HOW DOES MERRICK COMPARE TO THE COMPETITION?

FEATURES	SERIES 7000	COMPETITION
Control Method	Electrically Actuated Control Valve by Control Panel PLC	Proprietary Mechanical Torque Linkage and Special Duct Output Gear Reducer
Bearings	Outboard, Sealed	Sealed
Paste Consistency Alarm	Alarm for Out of Specification Paste Production	Not Available
Drive Components	Commercially Available Gear Reducer	Proprietary V-Belt Gear Reducer
Paste Consistency Adjust	Electronically Adjustable Set Point in Control Panel for Varying Lime Quality	Spring Tension Adjustment, No Indication Available
Proprietary Components	None	Torque Valve, Valve Linkage, Drive End, Reducer and Paddle Shaft Bearings